

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

In the Matter of)

PUBLIC UTILITIES COMMISSION)

Instituting a Proceeding to Investigate)
the Implementation Of Feed-in Tariffs)
_____)

Docket No. 2008-0273

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HAIKU DESIGN AND ANALYSIS

COMMENTS ON THE NATIONAL REGULATORY RESEARCH INSTITUTE PAPER

AND

CERTIFICATE OF SERVICE

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HAIKU DESIGN AND ANALYSIS

COMMENTS ON THE NATIONAL REGULATORY RESEARCH INSTITUTE PAPER

Carl Freedman, dba Haiku Design and Analysis (HDA) respectfully offers the following comments regarding the National Regulatory Research Institute (NRRI) scoping paper titled *Feed-in Tariffs: Best Design Focusing Hawaii's Investigation* (Scoping Paper).

Because the timing of the deadline for comments falls during pre-existing family vacation plans HDA's comments below are, by necessity, brief, regretfully cursory, and are filed early. The comments below address several additional factors that could be considered along with the factors identified in the Scoping Paper.

(1) The Scoping Paper is an excellent contribution that will help the Commission and the parties to efficiently and effectively frame the necessary issues in this docket. HDA commends the Commission for providing the scoping paper as part of the docket proceedings and commends NRRI and David Magnus Boonin for an insightful framing and treatment of the issues.

(2) CURTAILMENT - The Scoping Paper identifies a list of adjustments that might be considered to the feed in tariff price calculation (pp.10-11) and discusses limits or caps to the amount of power purchased by feed in tariffs (p. 8). Curtailment of purchases from renewable energy providers due to utility system limitations or conditions is one additional factor that should be considered in both of these sections. Curtailment is also an issue that will need to be addressed in feed-in tariff terms and perhaps in some explicit regulatory policies and standards governing curtailment protocols.

As the penetration of renewable generation on Hawaii's utility systems increases the issues regarding how much curtailment will be necessary, which resources will be curtailed, and how this will be determined will become more important. For several reasons curtailment (and grid operational considerations more generally) could be substantially more important in Hawaii than in other states and nations that implement feed-in tariffs. First, Hawaii's island utilities are small isolated systems that have baseload generation resource unit sizes that are relatively large compared to mainland interconnected systems and have relatively expensive operational reserve units on margin. Existing renewable energy sources are already sometimes curtailed when Hawaii's relatively small island utility systems face system minimum load operational constraints. Second, there is less geographic distribution and therefore more "simultaneity" in the availability of intermittent renewable resources than is the case for large interconnected mainland systems. Third, the Hawaii Clean Energy Initiative (HCEI) envisages higher penetrations of renewable generation resources than any state or nation that has existing feed-in tariffs. The HCEI

also envisages improvements to the utility grids to increase the potential penetration of intermittent renewable resources but the methods and efficacy of these measures is yet undetermined.

Curtailment results in a loss of revenue to renewable generation providers.

Uncertainty regarding curtailment frequency and duration creates uncertainty in the revenue stream expected from potential renewable resource projects which in turn translates into financial risk, difficulty in project financing and increased financing costs. This affects costs and lead times for prospective projects and is therefore a pricing issue. The extent to which higher penetrations of renewable generation exacerbates curtailment issues is also a consideration in determining any feed-in tariff caps.

Provisions regarding curtailment are included in existing renewable generation power purchase agreements. Feed-in tariffs will probably have to include some language regarding curtailment. For prospective renewable generation developers knowing the price is not enough. There needs to be some assurance that there will be a sufficient market for purchase of generated energy.

To the extent that ongoing curtailment protocols are unspecified or arbitrary and present a barrier to renewable resource financing or deployment, adoption of some regulatory standards might be considered. How will it be determined which resources will be curtailed when generation exceeds system demand? Under what system operating conditions will renewable resources be curtailed due to transients, potential transients or operation reserve margin economics? It must be recognized that minimization of system

operation costs (which is now the primary basis for utility system resource dispatch) may not result in maximum dispatch of renewable generation resources. Conversely stated, maximum dispatch of renewable generation may result in higher system operation costs. It must also be recognized that, even if all feed-in tariff revenues are a surcharge pass-through for the utilities, there are remaining economic incentives embedded in the existing energy cost adjustment mechanisms (which encourage utility generation resource efficiency) that present a potential bias in the dispatch of utility versus renewable generation resources.¹

(3) PRICING BY FORMULA VERSUS EMPIRICAL OR TESTIMONIAL METHODS.

- The Scoping Paper addresses project-cost based determination of feed-in tariffs. This approach bases tariff prices on the costs of each type of renewable generation including (“plus”) some reasonable amount of profit. The Scoping Paper suggests that the prices could be determined using a formula for capital and fixed and variable operation costs.

HDA makes two simple suggestions, recognizing that both suggestions are perhaps obvious and may already be contemplated implicitly in the pricing approach contemplated in the Scoping Paper.

First, in addition to the price factors explicitly listed (regarding which the parties are asked to provide information in Appendix A) several other factors should be considered in the pricing formula. Tax credits, for example, vary by resource size and type and directly affect the optimum pricing of feed in tariffs. Other factors might include (a) depreciation

¹ Maintaining increased levels of system operation reserve to accommodate the variability in intermittent renewable generation results in lower net utility revenues with the current energy cost adjustment mechanism. The current energy cost adjustment mechanism is not a straight cost pass-through but is a price adjustment mechanism that leaves the utility a financial incentive to increase composite utility generation resource thermodynamic efficiency.

methods and allowances (which might vary by resource type and size), (b) indirect factors such as project developer institutional arrangements that affect cost structure and (c) indirect factors that affect project risk and financial costs in the determination of applied capital carrying charges.

Second, the Commission may want to determine prices based, at least in part, on evidence from the parties other than inputs to a formula based price calculation. Factors such as consideration of the prices of recent projects (negotiated or competitively bid) and testimony regarding sufficient pricing might be considered directly in conjunction with what is determined by project cost formulae.

Just because project-cost based feed-in tariff prices are characterized as the costs of renewable resources plus a reasonable profit does not necessarily mean that determinations of the prices must be made strictly according to such a formula. More generally, project-cost based tariff pricing is intended to set prices sufficient to effectively promote development of resources (as opposed to basing prices on avoided cost or other determinant of cost effectiveness).

The formulaic approach suggested in the Scoping Paper is explicit and provides a clear record showing how resulting prices are determined. Given the complexity of factors that govern the pace of renewable project development, however, it may be difficult to be confident in the results without also considering other evidence regarding "correct" prices.

HDA thanks the Commission for providing the Scoping Paper and the opportunity to provide comments.

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The foregoing Haiku Design and Analysis Comments On the National Regulatory Research Institute Paper was served by electronic transmission and by first class mail, postage prepaid, and properly addressed on the date of signature below to the following parties in this docket:

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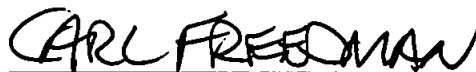
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